

# Do the Social Determinants of Health affect Myocardial Infarction Prognosis?

## INTRODUCTION

- Myocardial infarctions (MIs) largely contribute to the US Cardiovascular disease burden with over 800,00 MIs per year<sup>1</sup>
- Previous work has shown that the prognosis for sub-groups patients post MI is variable.<sup>2</sup>
- Investigations of extrinsic factors such as the social determinants of health (SoDH), that possibly impact prognosis, are limited
- The aim of this study is to determine what social factors may relate and/or contribute to MI prognosis after medical therapies.

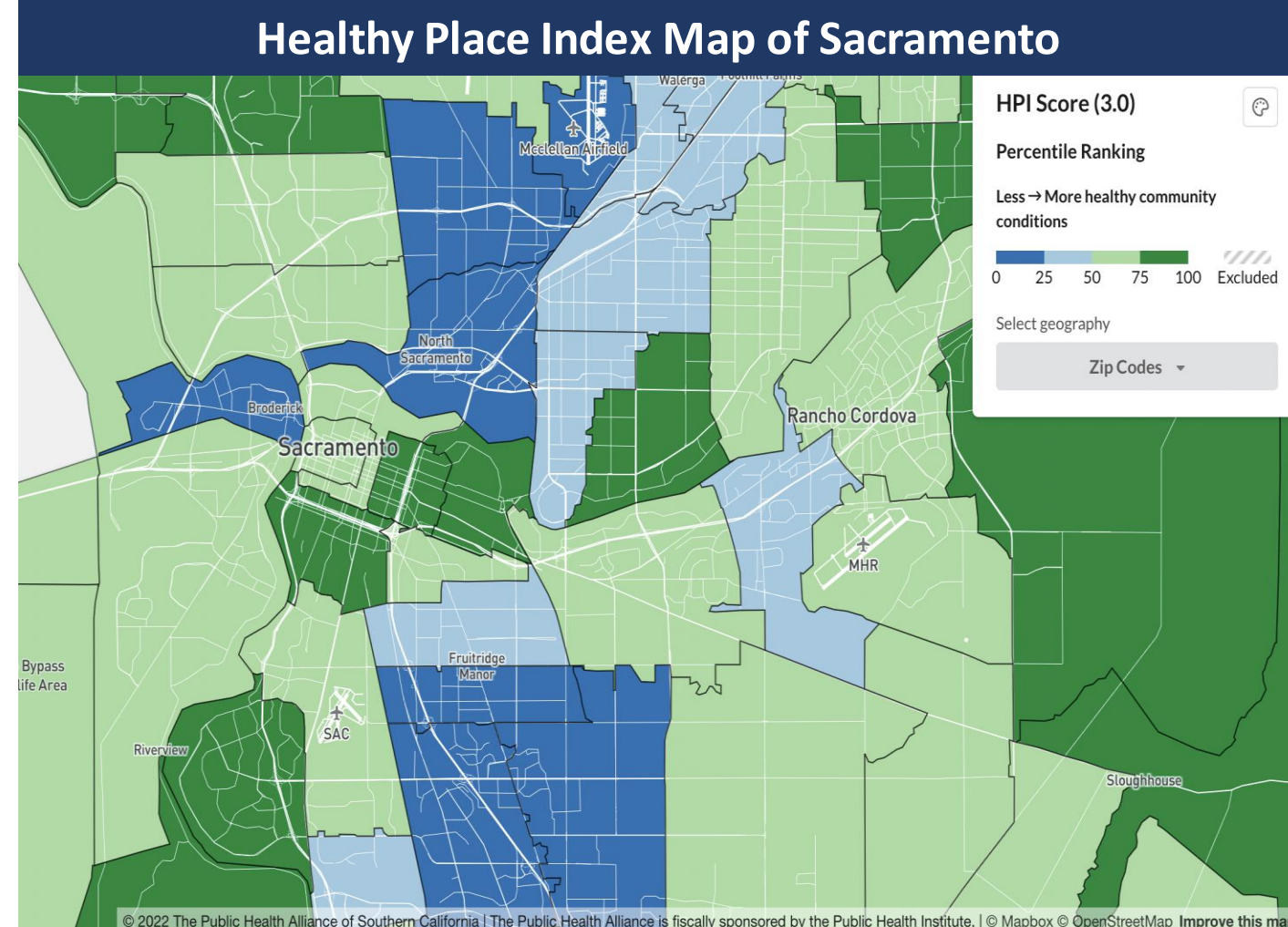
## OBJECTIVE

To determine if neighborhood and physical environment characteristics are associated with adverse events-free survival post MI.

## Methods

- Retrospective review with 798 UC Davis Health patients with a MI diagnosis and standard treatment during initial hospital admission was conducted.
- Patient's Zip code data was cross referenced with the California Healthy Places Index(HPI) for a HPI percentile score ranging from 0% (least healthy) to 100% ( most healthy).
- Neighborhood-by-neighborhood, the HPI maps data on social conditions that drive health — like education, job opportunities, clean air and water, and other indicators that are positively associated with life expectancy at birth.
- Associations were assessed between HPI score and major adverse cardiovascular events or MACE (death, recurrent MI, ReMI and Heart failure, HF).

## RESULTS



**Figure 1:** HPI MAP of Sacramento zip code areas. Dark blue is 25% or less ( Poor health conditions), light blue is 25% to 50% (fair health conditions,) light green and dark green represent above 50 % ( good health conditions).

### HPI Percentile Summary of MI Cohort

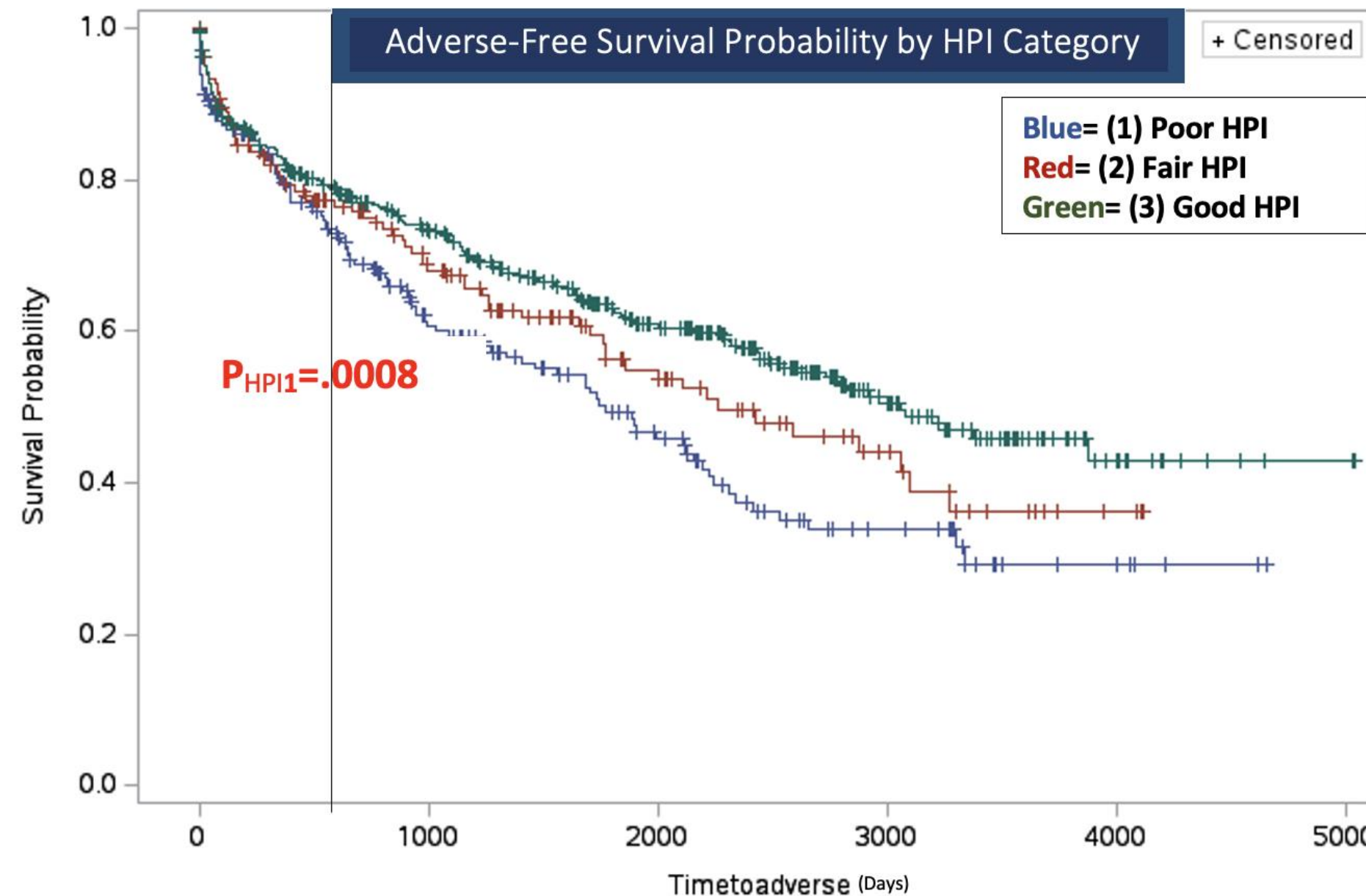
N	Missing*	Mean %	SD	Min %	Max %
767	31	49.29	23.20	7.3	99.

**Table 1:**HPI Percentile summary\*31 patients did not have a HPI percentile due to living out of state or being excluded from the HPI Map

### Distribution of Patient Membership within HPI Categories

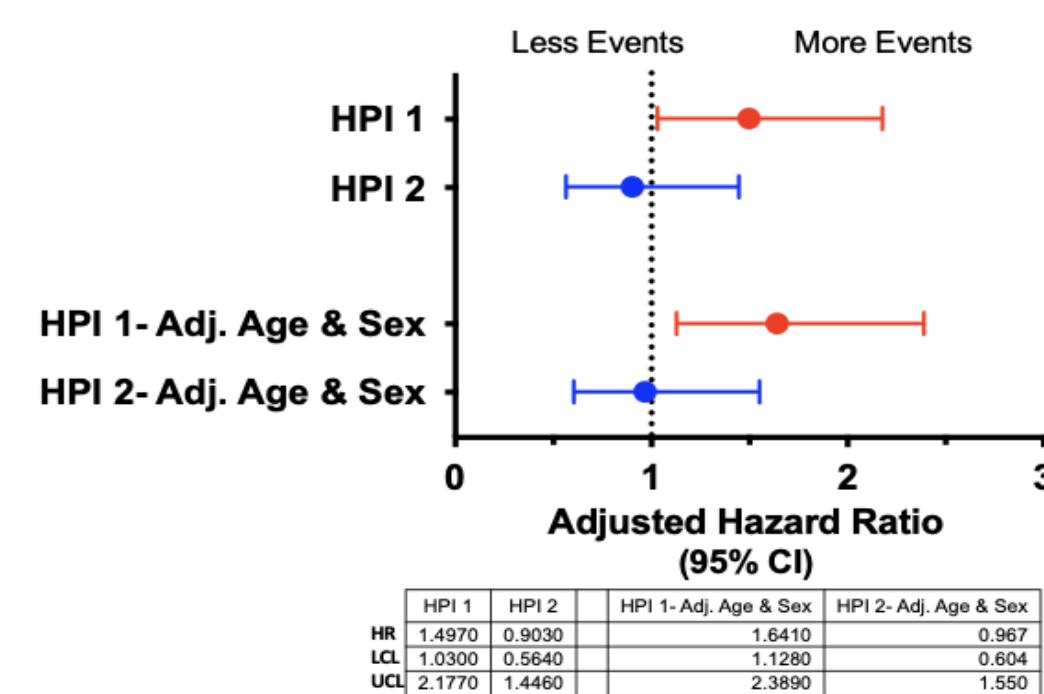
HPI Level	Frequency	Percent
Missing	31	3.88
(1)Poor HPI	196	24.56
(2)Fair HPI	163	20.43
(3)Good HPI	408	51.13
Total	798	100

**Table 2:**HPI Categories: HPI Percentile less than 25%= Poor health conditions, HPI greater than 25% but less than 50% = Fair health conditions, Greater than 50% HPI percentile= Good health conditions

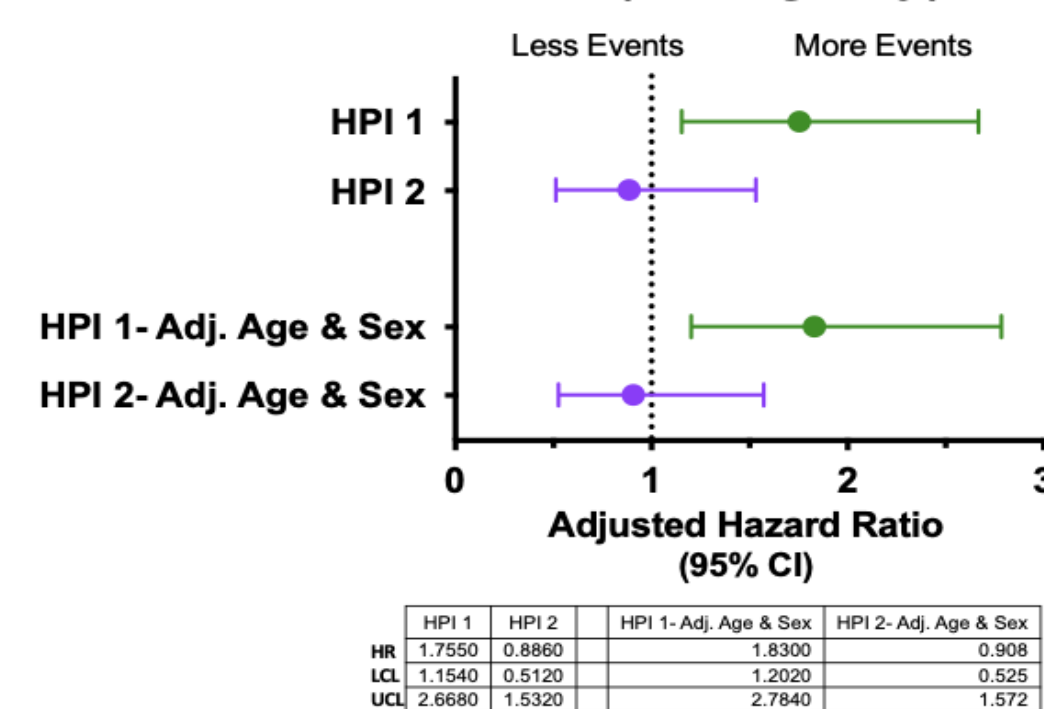


**Figure 2 & 3 :** KM Curve of Adverse Free probability by HPI. Adverse = death, ReMI, & HF. P value is compared to HPI 3 curve. Line represents start of curve separation around 600 days ( 1.6 yrs). Hazard Ratios (HRs) for Death and HF by HPI category. HPI HRs are significant.

### Death for HPI (Sex, Age adj.) HR 767



### HF for HPI (Sex, Age adj.) HR 767



Characteristics of MI cohort by HPI Category			
Characteristic	HPI Level 1 (Poor)	HPI Level 2 (Fair)	HPI Level 3 (Good)
	<b>Race</b>		
White	44%	62%	73%
Black	18%	14%	7%
Asian	18%	8%	10%
Native American	2%	0%	0%
Pacific Islander	8%	1%	1%
Other	10%	13%	7%
Unknown	3%	3%	2%
<b>Sex</b>			
Female	29%	30%	30%
Male	71%	70%	70%
<b>MI TYPE</b>			
STEMI	52%	57%	49%
NSTEMI	48%	43%	51%
<b>AGE</b>			
Mean Age	61 Years	63 Years	63 Years

**Table 3:** Characteristics: No significant differences in Sex, MI type or mean age across HPI categories.

## CONCLUSION

- SoDH as defined by HPI are associated to long-term MI outcomes despite initial therapies.
- Living in a neighborhood or physical environment with poor health conditions may be associated with long-term MACE
- Further studies are needed to explore factors within neighborhoods and physical environments that may drive long-term outcomes.

## REFERENCES

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- Kardasz, I., & De Caterina, R. (2007). Myocardial infarction with normal coronary arteries: a conundrum with multiple aetiologies and variable prognosis: an update. *Journal of internal medicine*, 261(4), 330-348.

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